

# PATENT SPECIFICATION

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 (72) Inventor MARTIAL CANAVOSO



## (54) METHOD OF MOULDING ONE-PIECE ARTICLES

(71) We, **PIERCAN S.A.**, a French corporate body of II et II Bis Rue Chardonnel, 75, Paris 13e, France do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a method of moulding one-piece articles, and in particular to a method of moulding gloves made of a synthetic material, in one piece without adhesive joins, the hands and the cuffs of the gloves being of different thicknesses. Gloves of this type commonly form part of apparatus such as sterile chambers, and enable an operator to handle objects within the chambers without contaminating the objects.

Accordingly, there is provided a method of moulding a one piece article, comprising the steps of heating a mould, covering a portion of the mould with a protecting member, dipping the mould whilst still hot and partially covered by the protecting member into a bath of coagulant having a first density, drying the coagulant on the mould, removing the protecting member and dipping the portion of the mould previously covered by the protecting member into a coagulant of a second density such that a marginal edge portion of the first dried coagulant on the mould is also dipped into the coagulant having the second density, drying on the mould the coagulant having the second density, and dipping the mould with its coagulants of different densities into a bath of natural or synthetic latex for a predetermined period to coat the two coagulants on the mould with latex.

In order that the invention may be more clearly understood, one embodiment thereof will now be described, by way of example only, reference being had to the accompanying drawing in which:

The Figure is a perspective view of apparatus for use in carrying out the invention,

In the Figure a plurality of porcelain glove moulds 1—4, 1—4' have cuff portions

5,6 and hand portions 7,8. The hand portions 7,8 of the moulds are covered with protector gloves 13,14 attached to the wrists of the moulds by rubber bracelets 15,16. The porcelain moulds may be dipped successively into a latex coagulant solution 22 contained in a tank 23.

The above described apparatus can be used manually and/or mechanically.

If it is desired to mechanize manufacture of the gloves, the support plate 21 from which the moulds are suspended and its cover plate 24 are connected by rods 29—32 to a conveyor and/or hoist device (not shown) for dipping the porcelain moulds 1 in the coagulant or latex bath 23. It will be understood that the moulds 1 can be made of any suitable material, such as aluminium.

Manufacture of the gloves comprises the following operations:

The moulds 1 of porcelain, aluminium or other suitable material are heated and the hand portions are quickly covered by the gloves 13,14. The moulds, whilst still hot and with the hand portions covered by the protector gloves are dipped into a liquid bath of coagulant 22 of methyl alcohol and calcium nitrate with a density of 1.14 g/cm<sup>3</sup>. The coagulant deposited on the moulds is dried at a temperature of 60 degrees centigrade for five minutes, with the hand portions of the moulds pointing upwards. The protector gloves covering the hand portions are then removed with the result that the coagulant of density 1.14 g/cm<sup>3</sup> is found to be deposited only on the cuff portions of the moulds. The hand portions only of the moulds are next dipped in a bath of coagulant, of methyl alcohol and calcium nitrate, but of density 0.90 g/cm<sup>3</sup> overlapping by about 2 centimetres on to the portions of the cuffs previously covered with coagulant of density 1.14 g/cm<sup>3</sup>. Drying of the coagulant deposited on the hand portions is effected by means of infrared rays. The mould coated with its coagulants of different densities is then dipped in a bath of natural or synthetic latex for a predetermined period.

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In the course of this operation the latex is deposited over the whole of the surface of the moulds but with greater thickness over the cuff portions than on the hand portions.

5 This is because the higher the density of the coagulant employed, the thicker the layer of latex deposited. Furthermore, the thickness of the layer of latex deposited on the moulds increases uniformly with the time of immersion

10 of the said moulds in the latex bath.

By this method of manufacture, gloves are obtained in one piece without any break in the continuity, and in which the hand covering is thin and on this account enables

15 good tactile perception, whilst the covering of the cuff is thicker, thus possessing a strength in accordance with the use which is to be made of it in practice.

Known processes to complete the manufacture of the gloves are carried out in the following order: drying, vulcanisation, removal from the mould, washing.

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The Applicants have produced, by the process which has just been described, gloves of natural or synthetic latex, with a thickness

25 of 3/10 of a millimetre in the hand and 6/10 of a millimetre in the cuff. It is possible by using different moulds to produce without adhesive joins other articles having a number

30 of different thicknesses.

#### WHAT WE CLAIM IS:—

1. A method of moulding a one piece article, comprising the steps of heating a mould, covering a portion of the mould with

35 a protecting member, dipping the mould whilst still hot and partially covered by the protecting member into a bath of coagulant having a first density, drying the coagulant on the mould, removing the protecting member

40 and dipping the portion of the mould previously covered by the protecting member into a coagulant of a second density such that a marginal edge portion of the first dried

coagulant on the mould is also dipped into the coagulant having the second density, drying on the mould the coagulant having the second density, and dipping the mould with its coagulants of different densities into a bath of natural or synthetic latex for a predetermined period, to coat the two coagulants

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of the mould with latex.

2. A method as claimed in claim 1 wherein the protecting member is clamped to the mould by a rubber bracelet.

3. A method as claimed in claims 1 or 2 wherein at least one of the coagulants is a solution of methyl alcohol and calcium nitrate.

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4. A method as claimed in any preceding claim wherein the first density of the coagulant is 1.24 grams/cc and the second density of the coagulant is 0.90 grams/cc.

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5. A method as claimed in any preceding claim wherein the coagulant having the first density is dried with the protecting member on the mould placed in a position above the unprotected portion of the mould.

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6. A method as claimed in any preceding claim wherein the coagulant having the first density is dried at a temperature of 60°C for a period of five minutes, and the coagulant having the second density is dried by means of infrared rays.

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7. A method according to any preceding claim wherein the article is a glove.

8. A one-piece article when made by the method as claimed in any of claims 1 to 7.

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9. A method of moulding a one-piece article, substantially as hereinbefore described with reference to the accompanying drawing.

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A. A. THORNTON & CO.,  
Chartered Patent Agents,  
Northumberland House,  
303/306 High Holborn,  
London, W.C.1.



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